COMPUTER-IMPLEMENTED AUTOMATED BUILDING DESIGN AND MODELING AND PROJECT COST ESTIMATION AND SCHEDULING SYSTEM

Abstract

A computer-implemented automated building design and modeling and construction project cost estimating and scheduling system ("DMES system") is described. The DMES system provides a central source for all of the design and construction information for a construction project in a coordinated two-dimensional and three-dimensional spatial database that is freely accessible by all of the members of an interdisciplinary construction project team as a means to produce automatically coordinated design development and construction document information. The DMES system acquires and stores all of the appropriate design, engineering, and construction expertise and information available for any building type for use in automatically assembling and coordinating the design, cost-estimating, and scheduling for a construction project. In one embodiment, the DMES system consists of a plurality of objects, comprising elements and massing elements arranged in an assembly hierarchy. Each of the objects includes programming code that defines an interface and discrete internal functions that define its behavior. When instantiated in the database, the objects automatically create further instances of other objects in the hierarchy, which in turn do the same, thus assembling a complete building model automatically from the initial manually-placed instance. The building model enables automatic generation of drawings and cost and scheduling information. By running automatic iterations of the building model, multiple designs may be evaluated to determine the optimum design.